C-A OPERATIONS PROCEDURES MANUAL

8.1.7 Turn On OF RFQ 1

Text Pages 1 through 4

Attachment

Hand Processed Changes

HPC No.	Date	Page Nos.	Initials

Revision No. 00

Approved: _____ _____
AGS Department Chairman Date

8.1.7 Turn On of RFQ1

1. Purpose

To provide instructions for Linac specialists on how to turn on the Radio Frequency Quadrupole 1, (RFQ 1), located in the Low Energy Beam Transport.

2. Responsibilities

2.1 Linac specialists are responsible for executing this procedure.

2.2 The Linac Operations Coordinator is responsible for ensuring that this procedure is implemented accurately and completely.

3. Prerequisites

3.1 Main RF water system or 10th System deionized water is on.

3.2 Tank 1 Cavity Cooling water system is on.

3.3 Low Level RF Drive system is operating.

3.4 RFQ vacuum is <5x10-6 Torr.

3.5 Security system is satisfied, Linac is secured for beam or the Tank 1 beam stop must remain closed.

3.6 The head of Linac operations should be consulted prior to turn on.

3.7 Qualified and trained Linac specialists.

4. Precaution

RF drive and pick-up coax cables are connected to the feed loop and all control ports.

5. Procedures

5.1 Check that the main 480 VAC RFQ 1, Buncher #1 and 208 VAC RFQ 1 disconnect switches are on, located behind the RFQ driver cart.

5.2 In panel box #100 energize:

A. 208 VAC disconnect, ckts #2, 4 & 6.
B. RFQ LCS rack #3 ckt #17
C. RFQ LCS rack #5 ckt #16

5.3 Check that the following RFQ 1 driver cabinet circuit breakers are on:

A. #'s 1,2,3,4,5,6
B. Air blower
C. 30 Kvdc anode P.S.

5.4 If no malfunction indications appear on the Driver AC Logic turn on controls; a green off indication will appear. Remove any local lock condition by depressing the off control and turn on the filaments. Observe the following operating parameters

A. 7651 Filament Voltmeter, 5.9 <-> 6.3 VAC.
B. 7651 Grid bias meter, 120 <-> 150 VDC.
C. Within 2 minutes the red light should come on.
D. The malfunction light should be gone from the High Voltage Logic controls.

5.5 Check that the Automatic Frequency Control located in rack #5, Linac RFQ 1 Monitoring, is set in the auto and local modes.

5.6 Check and that the phase and amplitude reference controls are set for remote operation and that the amplitude malfunction LED is blinking, Located in RFQ Amp & Phase Nim, rack #6.

5.7 If no malfunction indications appear on the High Voltage Logic turn on controls; a green off indication will appear. Remove any local lock condition by depressing the off control and turn the high voltage on. If a remote lock condition exists clearance to operate must come from the Apollo controls, Linac/RFQII file. Observe the following operating parameters:

A. 7651 screen grid P.S., 550 <-> 600 Vdc.
B. 7651 Anode P.S., 4.5 <-> 5.0 Kvdc.
C. 4616 grid bias P.S., 250 <-> 300 Vdc.
D. 4616 screen mod p.s., 2Kv.
E. 4616 anode is approx. 15 Kv.

5.8 If no malfunction indications appear on the RFQ Pulsing Logic turn on controls; a green off indication will appear. Remove any local lock condition by depressing the off control and turn the pulsing on. If a remote lock condition exists clearance to operate must come from the Apollo controls, preinjector file. The RF Drive will also come on with this control.

5.9 Run Spreadsheet and check the RFQII file for the correct RFQ 1 phase and amplitude settings. Reset to the last saved file in all modes if necessary.

5.10 If all malfunction lights go out **the RFQ 1 is now operating.** If not, check the following scope pulsed monitors at the RFQ 1 monitoring rack #5 for correct operation:

A. RF Gradient, amplitude is .2 Volts @ 170 on the slideback detector.
B. Phase Control Loop is nulled.
C. Phase Monitor Loop is nulled.
D. 4616 IN; Fwr. Power >3.0 v. & Rev. Power <.5 v.
E. 4616 Out, Rev. Power <1.0 volt

5.11 If 4616 out rev. power is >1.0 volts initiate procedure called out in attachment #1.

5.12 If problems persist and RFQ is still not operating at the correct level or sparking is noticed in the 4616 anode cavity, coax or RFQ 1 cavity, do not restart, secure pulsing and high voltage. Refer condition to a systems specialist.

6.Documentation

None.

7.References

None.

8.Attachments

Procedure To Lock The Automatic Frequency Control Loop For RFQ 1.